

# Atmospheric Analysis & Consulting, Inc.

CLIENT : SWAPE  
PROJECT NAME : Bridgeton Sanitary Landfill Quality Assessment  
AAC PROJECT NO. : 131144  
REPORT DATE : 08/26/2013

On August 26, 2013, Atmospheric Analysis & Consulting, Inc. received four (4) Six-Liter Summa Canisters for Total Reduced Sulfur analysis by ASTM D-5504. Upon receipt, the samples were assigned unique Laboratory ID numbers as follows:

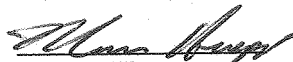
Client ID	Lab No.	Return Pressure (mmHgA)
U-1 FR Series Canister	131144-65859	660.3
U-2 W6 Canister	131144-65860	623.3
D-1 W2 Canister	131144-65861	736.7
D-2 K Canister	131144-65862	597.4

ASTM D-5504 Analysis - Up to a 1 mL aliquot of sample is injected into the GC/SCD for analysis following ASTM D-5504 as specified in the SOW.

No problems were encountered during receiving, preparation, and/ or analysis of these samples. The test results included in this report meet all requirements of the NELAC Standards and/or AAC SOP# AACI-ASTM D-5504.

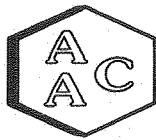
I certify that this data is technically accurate, complete, and in compliance with the terms and conditions of the contract. The Laboratory Director or his designee, as verified by the following signature, has authorized release of the data contained in this hardcopy data package.

If you have any questions or require further explanation of data results, please contact the undersigned.

  
Marcus Hueppe  
Laboratory Director

This report consists of 35 pages.





### SAMPLE RECEIPT / LOG-IN REPORT

AAC Project 131144

Received By: J. Zachman

<u>Sample Receipt Date</u>	<u>Project Desc</u>	<u>Clients ID</u>	<u>Matrix</u>	<u>Sampling Date/Time</u>	<u>Sampled By</u>	<u>Sample #</u>	<u>Analysis Requested</u>
8/26/2013 1130	Soil Water Air Protection Enterprise (SWAPE) Bridgeton Sanitary Landfill Air Quality Assessment	U-1 FR Service Canister	Summa Canister	8/21/2013	Client	65859	TO15 ASTM D5504
8/26/2013 1130	Soil Water Air Protection Enterprise (SWAPE) Bridgeton Sanitary Landfill Air Quality Assessment	U-2 W6	Summa Canister	8/21/2013	Client	65860	TO15 ASTM D5504
8/26/2013 1130	Soil Water Air Protection Enterprise (SWAPE) Bridgeton Sanitary Landfill Air Quality Assessment	D-1 W2	Summa Canister	8/21/2013	Client	65861	TO15 ASTM D5504
8/26/2013 1130	Soil Water Air Protection Enterprise (SWAPE) Bridgeton Sanitary Landfill Air Quality Assessment	D-2 K	Summa Canister	8/21/2013	Client	65862	TO15 ASTM D5504

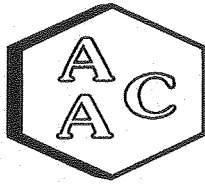
**TURN AROUND TIME:** Normal (10days)

Lab Due Date: 9/2/2013

Total Samples: 4

**REMARKS:**

Client returned 4 x Summa canisters + 4 x Flows. "Standard TAT for all analyses. If possible deliver report within 2 weeks. Provide Level IV QC package for all analyses."



**CANISTER PRESSURE LOG**

Client: Soil Water Air Protection Ent      Project No.: 131144  
Date: 8/26/2013

Canister #	Sample #	Initial Pressure	Final Pressure
798	65859	660.3	1021.1
801	65860	623.3	1022.0
800	65861	736.7	1028.5
702	65862	597.4	1021.7

AAC# 131144

CHAIN OF CUSTODY RECORD / ANALYTICAL REQUEST FORM

Client Name: SOIL / WATER AIR PROTECTION ENTERPRISE Telephone No. / Fax No.: (310) 434-0110 / (310) 434-0011 Date: August 21st Page 1 of 1

Project Manager: PAUL ROSENFELD, PH.D. Address: 1640 FIFTH STREET, SUITE 204, SANTA MONICA, CA 90401

Project Name and Location: BRIDGETON SANITARY LANDFILL AIR QUALITY ASSESSMENT

Sampled By: John Blank Sampler Signature: *John Blank*

LAB ID	SAMPLE ID NUMBER	Type	Date	Time	VOCS - EPA TO-15	Reduced Sulfur Compounds - ASTM D5504	Carbonyls - EPA TO-11A	Carboxylic Acids - Tube GC-MS	HCL - NIOSH 7903	Ammonia - OSHA ID-188	SO2 - OSHA ID-200	HCN - NIOSH 6010	Amines - NIOSH 2010M	Fixed Gases - EPA 3C	PAHs / Dioxins EPA TO-13A/9A	Mercury - NIOSH 6009	Odor Evaluation	
65854	U-1 FR Service	Canister	August 21st	303 min	X	X												Canister # 798
65860	U-2 W6	Canister	August 21st	330 min	X	X												Canister # 801
65861	D-1 W2	Canister	August 21st	300 min	X	X												Canister # 800
65862	D-1 K	Canister	August 21st	270 min	X	X												Canister # 702

Requested Turnaround Time: Standard turn-around for all analyses. If possible deliver report within 2 weeks. QC Requirements: Provide Level IV QC Package for all Analyses.

Relinquished By: John Blank Date: August 21st Time: 12 Noon Received By: Date: Time:

Relinquished By: *John Blank* Date: Time: Received By: *[Signature]* Date: 8/21/03 Time: 1130

# Atmospheric Analysis and Consulting Inc.

## Canister Sampling Field Data Sheet

### GENERAL INFORMATION

Project Name and/or ID No.: **Bridgeton Sanitary Landfill**

Site Address and/or ID No: **13570 St Charles Rock Rd, Bridgeton, MO 63044**

Sample Name and/or ID No.: **U- 1**      **Canister #798**      **Flow Control #808**

AAC Batch ID: 131144      AAC Sample ID: 65859

### SAMPLING INFORMATION

Start Date/Time: **Aug 21st, 2013 - 10:12 AM**      Stop Date/Time: **Aug 21st, 2013 - 15:15 PM**

Start Temp/Pressure\*: **27 C / 30.14 inHg**      Stop Temp/Pressure\*: **32 C / 30.10 inHg**

Initial Can Pressure\*\*: **- 31 inHg**      Final Can Pressure\*\*: **- 5 inHg**

\* Ambient Barometric Reading where sample is being taken (C / inHg)      \*\* Flow Controller Gauge Reading (inHg)

Comments: \_\_\_\_\_



**John Blank**  
Sampler Name (Print)

**August 21st, 2013**  
Sampler Signature/Date

### LABORATORY INFORMATION

Canister Size: 6 - Liter

Sampling Period: 303 Minutes

Canister Serial No.: **798**

Flow Controller Serial No: **808**

Initial Pressure: 3.1

Certified Flow Rate: 18.0

Return Pressure: 660.3

Certified By/Date: AF 8/1/13

Final Pressure: 1021.1

Flow Rate upon Return: NR

Date Shipped From Lab: 8/1/13

Shipped By: AF

Date Returned to Lab: 8/26/13

Received By: AF

Flow Controller Certification File ID: M08/07311310

Canister Certification File ID: M08/0731304

Certification Type: SIM \_\_\_\_\_ SCAN  NJLL \_\_\_\_\_ PAMS \_\_\_\_\_ Other \_\_\_\_\_

  
Chemist Signature/Date

  
Lab Manager Signature/Date

**Sampler is required to fill out all highlighted sections during sampling.**

# Atmospheric Analysis and Consulting Inc.

## Canister Sampling Field Data Sheet

### GENERAL INFORMATION

Project Name and/or ID No.: **Bridgeton Sanitary Landfill**

Site Address and/or ID No: **13570 St Charles Rock Rd, Bridgeton, MO 63044**

Sample Name and/or ID No.: **U-2 W6**

Canister # **801**

Flow Control # **804**

AAC Batch ID: 131144

AAC Sample ID: 65860

### SAMPLING INFORMATION

Start Date/Time: **Aug 21st, 2013 - 10:30 AM**

Stop Date/Time: **Aug 21st, 2013 - 16:00 PM**

Start Temp/Pressure\*: **27 C / 30.14 inHg**


Stop Temp/Pressure\*: **32 C / 30.10 inHg**

Initial Can Pressure\*\*: **- 30 inHg**

Final Can Pressure\*\*: **- 5 inHg**

\* Ambient Barometric Reading where sample is being taken (C / inHg) \*\* Flow Controller Gauge Reading (inHg)

Comments: \_\_\_\_\_



**John Blank**  
Sampler Name (Print)

**August 21st, 2013**  
Sampler Signature/Date

Canister Size: 6 - Liter

Sampling Period: 330 Minutes

Canister Serial No: **801**

Flow Controller Serial No: **804**

Initial Pressure: 2.4

Certified Flow Rate: 18.0

Return Pressure: 623.3

Certified By/Date: 17 8/11/13

Final Pressure: 1022.0

Flow Rate upon Return: NR

Date Shipped From Lab: 8/11/13

Shipped By: 17

Date Returned to Lab: 8/26/13

Received By: 17

Flow Controller Certification File ID: 11503/0723113/10

Canister Certification File ID: 11503/072313/09

Certification Type: SIM \_\_\_\_\_ SCAN  NJLL \_\_\_\_\_ PAMS \_\_\_\_\_ Other \_\_\_\_\_



Chemist Signature/Date 08/27/13



Lab Manager Signature/Date NR 8/27/13

*Sampler is required to fill out all highlighted sections during sampling.  
All remaining sections will be completed upon return by the laboratory.*

# Atmospheric Analysis and Consulting Inc.

## Canister Sampling Field Data Sheet

### GENERAL INFORMATION

Project Name and/or ID No.: **Bridgeton Sanitary Landfill**

Site Address and/or ID No: **13570 St Charles Rock Rd, Bridgeton, MO 63044**

Sample Name and/or ID No.: **D-1 W2**

Canister # **800**

Flow Control # **693**

AAC Batch ID: 131199

AAC Sample ID: 65861

### SAMPLING INFORMATION

Start Date/Time: **Aug 21st, 2013 - 10:40 AM**

Stop Date/Time: **Aug 14th, 2013 - 15:20 PM**

Start Temp/Pressure\*: **27 C / 30.14 inHg**

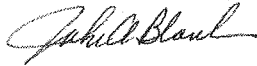
Stop Temp/Pressure\*: **32 C / 30.10 inHg**

Initial Can Pressure\*\*: **- 27 inHg**

Final Can Pressure\*\*: **- 1 inHg**

\* Ambient Barometric Reading where sample is being taken (C / inHg) \*\* Flow Controller Gauge Reading (inHg)

Comments: \_\_\_\_\_



**John Blank**

*Sampler Name (Print)*

**August 21st, 2013**

*Sampler Signature/Date*

### LABORATORY INFORMATION

Canister Size: 6 - Liter

Sampling Period: 280 Minutes

Canister Serial No.: **800**

Flow Controller Serial No: **693**

Initial Pressure: 3.1

Certified Flow Rate: 18.0

Return Pressure: 736.7

Certified By/Date: JJ 8/1/13

Final Pressure: 1028.5

Flow Rate upon Return: NR

Date Shipped From Lab: 8/1/13

Shipped By: JJ

Date Returned to Lab: 8/26/13

Received By: JJ

Flow Controller Certification File ID: 1403/07311310

Canister Certification File ID: 1403/07311310

Certification Type: SIM \_\_\_\_\_ SCAN  NJLL \_\_\_\_\_ PAMS \_\_\_\_\_ Other \_\_\_\_\_

 8/21/13  
*Chemist Signature/Date*

 5/27/17  
*Lab Manager Signature/Date*

# Atmospheric Analysis and Consulting Inc.

## Canister Sampling Field Data Sheet

*Sampler is required to fill out all highlighted sections during sampling.  
All remaining sections will be completed upon return by the laboratory.*

### GENERAL INFORMATION

Project Name and/or ID No.: **Bridgeton Sanitary Landfill**

Site Address and/or ID No: **13570 St Charles Rock Rd, Bridgeton, MO 63044**

Sample Name and/or ID No.: **D- 2 K** Canister # **702** Flow Control # **692**

AAC Batch ID: 131 144 AAC Sample ID: 65862

### SAMPLING INFORMATION

Start Date/Time: **Aug 21st, 2013 - 10:55 AM** Stop Date/Time: **Aug 21st, 2013 - 15:25 PM**

Start Temp/Pressure\*: **27 C / 30.14 inHg** Stop Temp/Pressure\*: **32 C / 30.10 inHg**

Initial Can Pressure\*\*: **- 30 inHg** Final Can Pressure\*\*: **- 5 inHg**

\* Ambient Barometric Reading where sample is being taken (C / inHg) \*\* Flow Controller Gauge Reading (inHg)

Comments: \_\_\_\_\_



**John Blank**  
*Sampler Name (Print)*

**August 21st, 2013**  
*Sampler Signature/Date*

### LABORATORY INFORMATION

Canister Size: 6 - Liter

Sampling Period: 270 Minutes

Canister Serial No.: **702**

Flow Controller Serial No: **692**

Initial Pressure: 2.9

Certified Flow Rate: 18.0

Return Pressure: 597.4

Certified By/Date: JA 8/1/13

Final Pressure: 1021.7

Flow Rate upon Return: NR

Date Shipped From Lab: 8/1/13

Shipped By: JA

Date Returned to Lab: 8/26/13

Received By: JA

Flow Controller Certification File ID: MS03/07311310

Canister Certification File ID: MS03/07231309

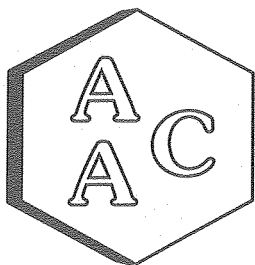
Certification Type: SIM \_\_\_\_\_ SCAN  NJLL \_\_\_\_\_ PAMS \_\_\_\_\_ Other \_\_\_\_\_

  
*Chemist Signature/Date*

MR 8/27/13  
*Lab Manager Signature/Date*



# Results



# Atmospheric Analysis & Consulting, Inc.

## LABORATORY ANALYSIS REPORT

CLIENT : SWAPE  
 PROJECT NO. : 131144  
 MATRIX : AIR  
 UNITS : ppbV

SAMPLING DATE : 08/21/2013  
 RECEIVING DATE : 08/26/2013  
 ANALYSIS DATE : 08/26/2013  
 REPORT DATE : 08/26/2013

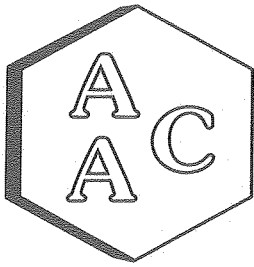
### Sulfur Compounds by ASTM D-5504

Client ID	U-1 FR Series Canister	U-2 W6 Canister	D-1 W2 Canister	D-2 K Canister
AAC ID	131144-65859	131144-65860	131144-65861	131144-65862
Canister Dil. Fac.	1.55	1.64	1.40	1.71
Analyte	Result	Result	Result	Result
Hydrogen Sulfide	< 15.5	< 16.4	< 14.0	< 17.1
Carbonyl Sulfide	< 15.5	< 16.4	< 14.0	< 17.1
Sulfur Dioxide	< 15.5	< 16.4	< 14.0	< 17.1
Methyl Mercaptan	< 15.5	< 16.4	< 14.0	< 17.1
Ethyl Mercaptan	< 15.5	< 16.4	< 14.0	< 17.1
Dimethyl Sulfide	< 15.5	< 16.4	< 14.0	< 17.1
Carbon Disulfide	< 7.7	< 8.2	< 7.0	< 8.6
Isopropyl Mercaptan	< 15.5	< 16.4	< 14.0	< 17.1
tert-Butyl Mercaptan	< 15.5	< 16.4	< 14.0	< 17.1
n-Propyl Mercaptan	< 15.5	< 16.4	< 14.0	< 17.1
Methylethylsulfide	< 15.5	< 16.4	< 14.0	< 17.1
sec-Butyl Mercaptan	< 15.5	< 16.4	< 14.0	< 17.1
Thiophene	< 15.5	< 16.4	< 14.0	< 17.1
iso-Butyl Mercaptan	< 15.5	< 16.4	< 14.0	< 17.1
Diethyl Sulfide	< 15.5	< 16.4	< 14.0	< 17.1
n-Butyl Mercaptan	< 15.5	< 16.4	< 14.0	< 17.1
Dimethyl Disulfide	< 7.7	< 8.2	< 7.0	< 8.6
2-Methylthiophene	< 15.5	< 16.4	< 14.0	< 17.1
3-Methylthiophene	< 15.5	< 16.4	< 14.0	< 17.1
Tetrahydrothiophene	< 15.5	< 16.4	< 14.0	< 17.1
Bromothiophene	< 15.5	< 16.4	< 14.0	< 17.1
Thiophenol	< 15.5	< 16.4	< 14.0	< 17.1
Diethyl disulfide	< 7.7	< 8.2	< 7.0	< 8.6
Total Unidentified Sulfur	< 15.5	< 16.4	< 14.0	< 17.1

All unidentified sulfur compound's concentrations expressed in terms of  $\frac{1}{2}$  SQL  
 Sample Quantitation Limit (SQL) is equal to the Quantitation Limit x Canister Dil. Fac. x Analysis Dil. Fac.

  
 Marcus Hueppe  
 Laboratory Director





# Atmospheric Analysis & Consulting, Inc.

## LABORATORY ANALYSIS REPORT


CLIENT : SWAPE  
 PROJECT NO. : 131144  
 MATRIX : AIR  
 UNITS : ug/m<sup>3</sup>

SAMPLING DATE : 08/21/2013  
 RECEIVING DATE : 08/26/2013  
 ANALYSIS DATE : 08/26/2013  
 REPORT DATE : 08/26/2013

### Sulfur Compounds by ASTM D-5504

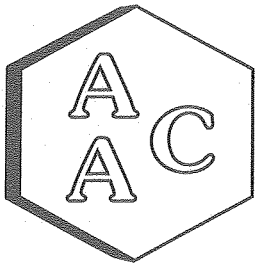
Client ID	U-1 FR Series Canister	U-2 W6 Canister	D-1 W2 Canister	D-2 K Canister
AAC ID	131144-65859	131144-65860	131144-65861	131144-65862
Canister Dil. Fac.	1.55	1.64	1.40	1.71
Analyte	Result	Result	Result	Result
Hydrogen Sulfide	< 21.6	< 22.9	< 19.5	< 23.8
Carbonyl Sulfide	< 38.0	< 40.3	< 34.3	< 42.0
Sulfur Dioxide	< 40.5	< 43.0	< 36.6	< 44.8
Methyl Mercaptan	< 30.4	< 32.3	< 27.5	< 33.7
Ethyl Mercaptan	< 39.3	< 41.7	< 35.5	< 43.5
Dimethyl Sulfide	< 39.3	< 41.7	< 35.5	< 43.5
Carbon Disulfide	< 24.1	< 25.5	< 21.7	< 26.6
Isopropyl Mercaptan	< 48.2	< 51.1	< 43.5	< 53.3
tert-Butyl Mercaptan	< 57.0	< 60.5	< 51.5	< 63.1
n-Propyl Mercaptan	< 48.2	< 51.1	< 43.5	< 53.3
Methylethylsulfide	< 48.2	< 51.1	< 43.5	< 53.3
sec-Butyl Mercaptan	< 57.0	< 60.5	< 51.5	< 63.1
Thiophene	< 53.2	< 56.4	< 48.0	< 58.9
iso-Butyl Mercaptan	< 57.0	< 60.5	< 51.5	< 63.1
Diethyl Sulfide	< 57.0	< 60.5	< 51.5	< 63.1
n-Butyl Mercaptan	< 57.0	< 60.5	< 51.5	< 63.1
Dimethyl Disulfide	< 29.8	< 31.6	< 26.9	< 32.9
2-Methylthiophene	< 62.1	< 65.8	< 56.0	< 68.7
3-Methylthiophene	< 62.1	< 65.8	< 56.0	< 68.7
Tetrahydrothiophene	< 55.8	< 59.1	< 50.3	< 61.7
Bromothiophene	< 103	< 109	< 93.1	< 114
Thiophenol	< 69.7	< 73.9	< 62.9	< 77.1
Diethyl disulfide	< 38.7	< 41.0	< 34.9	< 42.8
Total Unidentified Sulfur	< 21.6	< 22.9	< 19.5	< 23.8

All unidentified sulfur compound's concentrations expressed in terms of  $\mu\text{S}$   
 Sample Quantitation Limit (SQL) is equal to the Quantitation Limit x Canister Dil. Fac. x Analysis Dil. Fac.

  
 Marcus Hueppe  
 Laboratory Director



# **QA/QC Summary**



# Atmospheric Analysis & Consulting, Inc.

## Quality Control/Quality Assurance Report ASTM D-5504

Date Analyzed: 08/26/13  
Analyst: DH

Instrument ID: SCD#10  
Calb. Date: 5/14/2013

**Opening Calibration Verification Standard**

	Resp. (area)	Result (ppbV)	% Rec *	% RPD ****
Initial	17058	506	101.2	NA
Duplicate	17122	508	101.6	0.4
Triplicate	17318	514	102.7	1.5

**Method Blank**

Analyte	Result
H2S	ND

**Matrix Spike & Duplicate**

Sample ID 131139-65821 x2

Analyte	Sample Conc.	Spike Added	MS Result	MSD Result	MS % Rec **	MSD % Rec **	% RPD ***
H2S	0.0	250.0	269.4	264.2	107.8	105.7	1.9

**Duplicate Analysis**

Sample ID 131139-65821

Analyte	Sample Result	Duplicate Result	Mean	% RPD ***
H2S	0.0	0.0	0.0	0.0

**Closing Calibration Verification Standard**

Analyte	Std. Conc.	Result	%Recovery **
H2S	500	522.2	104.4

\* Must be 95-105%

\*\* Must be 90-110%

\*\*\* Must be < 10%

\*\*\*\* must be < 5% RPD from Initial result.

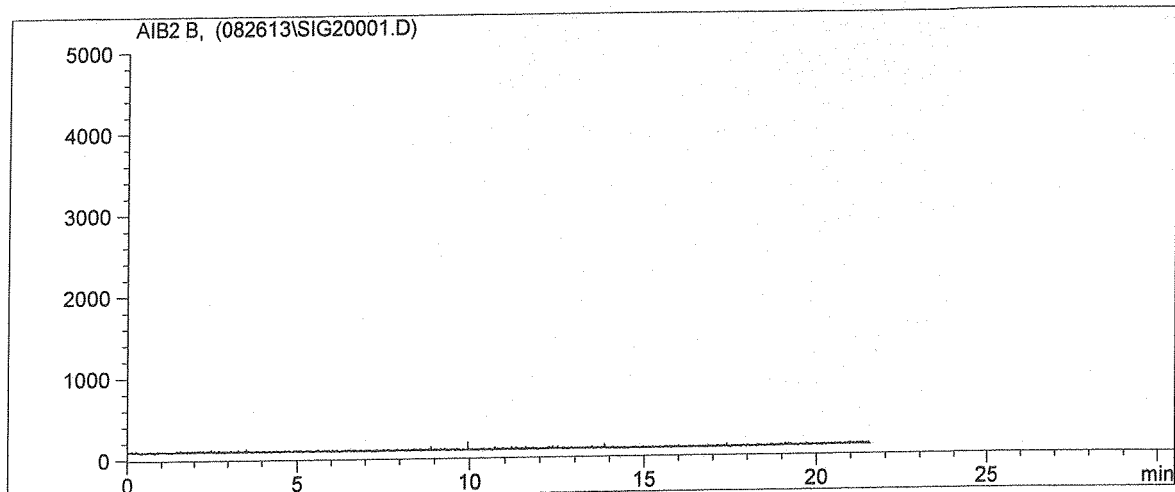
Marcus Hueppe  
Laboratory Director



# Raw Data

Customized Report: D5504

Injection Date : 8/26/2013 5:56:49 AM      Seq. Line : 1  
 Sample Name : System Blank                    Inj. Vol. : Manually  
 Multiplier : 1.00  
 Dilution : 1.00  
 Acq Operator : DH  
 Acq. Instrument : GC/SCD #10  
 Acq. Method : ASTM5504.M  
 Analysis Method : C:\HPCHEM\1\METHODS\D051413.M



Uncalibrated Peaks : using compound H2S  
 Ret Time      Area                    Amount                    Name  
 [min]                                    [ppbV]

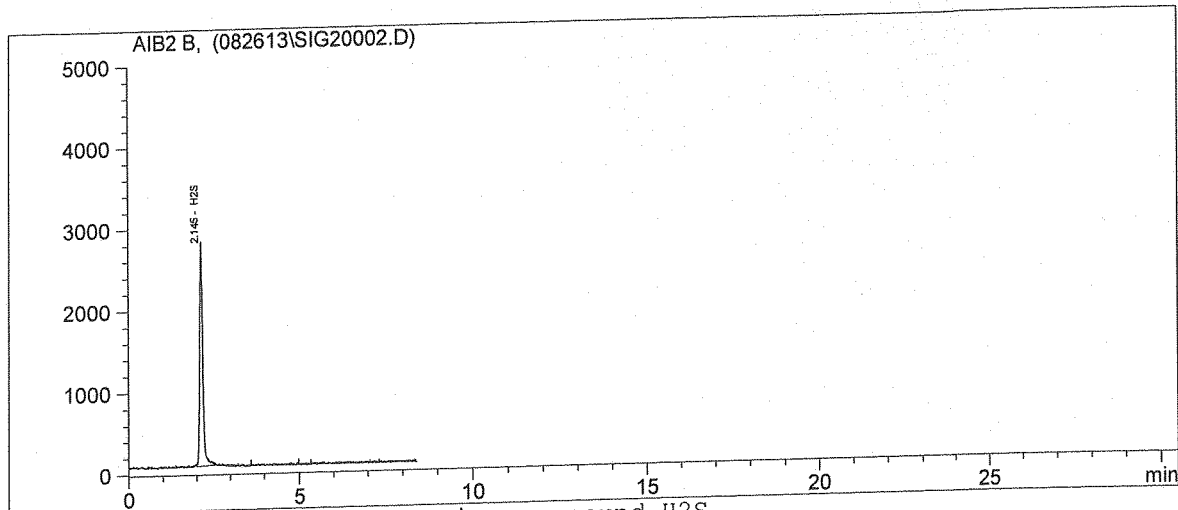
Ret Time [min]	Area	Amount [ppbV]	Name
0.000	0	0.000	H2S
0.000	0	0.000	COS
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Ethyl Methyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan
0.000	0	0.000	Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	n-Pentyl Mercaptan
0.000	0	0.000	2-Ethylthiophene
0.000	0	0.000	2,5-Dimethylthiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	n-Hexyl Mercaptan
0.000	0	0.000	2-Propylthiophene
0.000	0	0.000	Dimethyl Trisulfide
0.000	0	0.000	n-Heptyl Mercaptan
0.000	0	0.000	2-Butylthiophene
0.000	0	0.000	Dipropyl Disulfide
0.000	0	0.000	n-Octyl Mercaptan
0.000	0	0.000	Dipropyl Trisulfide

Totals:                                    0.000

\*\*\* End of Report \*\*\*

Customized Report: D5504

Injection Date : 8/26/2013 6:20:45 AM      Seq. Line : 2  
 Sample Name : CCV 500ppbV      SS0677      ->Inj. Vol. : Manually  
 Multiplier : 1.00  
 Dilution : 1.00  
 Acq Operator : DH  
 Acq. Instrument : GC/SCD #10  
 Acq. Method : ASTM5504.M  
 Analysis Method : C:\HPCHEM\1\METHODS\D051413.M



Uncalibrated Peaks : using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
2.145	17058	505.927	H2S
0.000	0	0.000	COS
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Ethyl Methyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan
0.000	0	0.000	Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	n-Pentyl Mercaptan
0.000	0	0.000	2-Ethylthiophene
0.000	0	0.000	2,5-Dimethylthiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	n-Hexyl Mercaptan
0.000	0	0.000	2-Propylthiophene
0.000	0	0.000	Dimethyl Trisulfide
0.000	0	0.000	n-Heptyl Mercaptan
0.000	0	0.000	2-Butylthiophene
0.000	0	0.000	Dipropyl Disulfide
0.000	0	0.000	n-Octyl Mercaptan
0.000	0	0.000	Dipropyl Trisulfide

Totals: 505.927

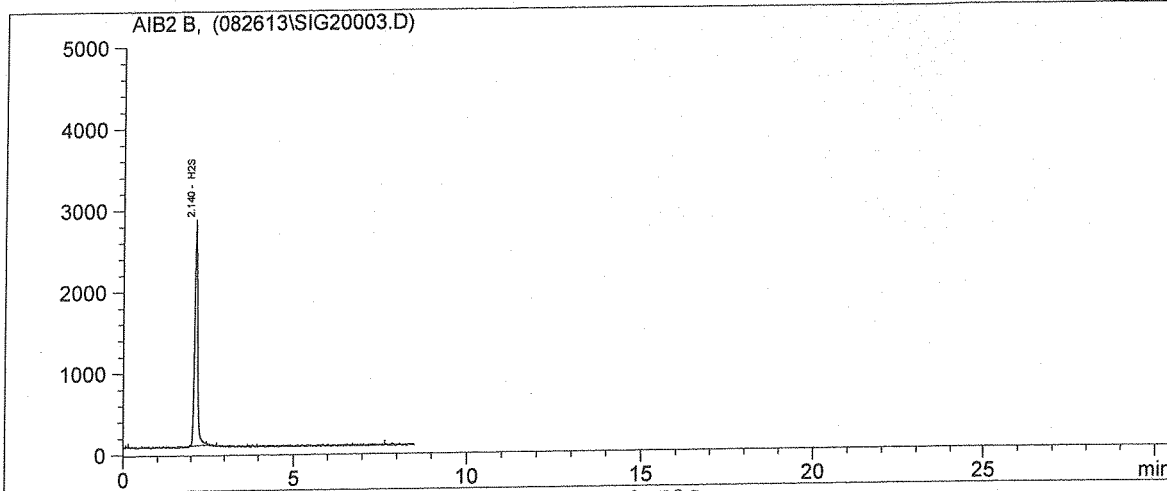
\*\*\* End of Report \*\*\*

DH 8/26/13



Customized Report: D5504

Injection Date : 8/26/2013 6:30:06 AM      Seq. Line : 3  
 Sample Name : CCV 500ppbV dp    SS0677      ->Inj. Vol. : Manually  
 Multiplier : 1.00  
 Dilution : 1.00  
 Acq Operator : DH  
 Acq. Instrument : GC/SCD #10  
 Acq. Method : ASTM5504.M  
 Analysis Method : C:\HPCHEM\1\METHODS\D051413.M



Uncalibrated Peaks : using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
2.140	17122	507.807	H2S
0.000	0	0.000	COS
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Ethyl Methyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan
0.000	0	0.000	Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	n-Pentyl Mercaptan
0.000	0	0.000	2-Ethylthiophene
0.000	0	0.000	2,5-Dimethylthiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	n-Hexyl Mercaptan
0.000	0	0.000	2-Propylthiophene
0.000	0	0.000	Dimethyl Trisulfide
0.000	0	0.000	n-Heptyl Mercaptan
0.000	0	0.000	2-Butylthiophene
0.000	0	0.000	Dipropyl Disulfide
0.000	0	0.000	n-Octyl Mercaptan
0.000	0	0.000	Dipropyl Trisulfide

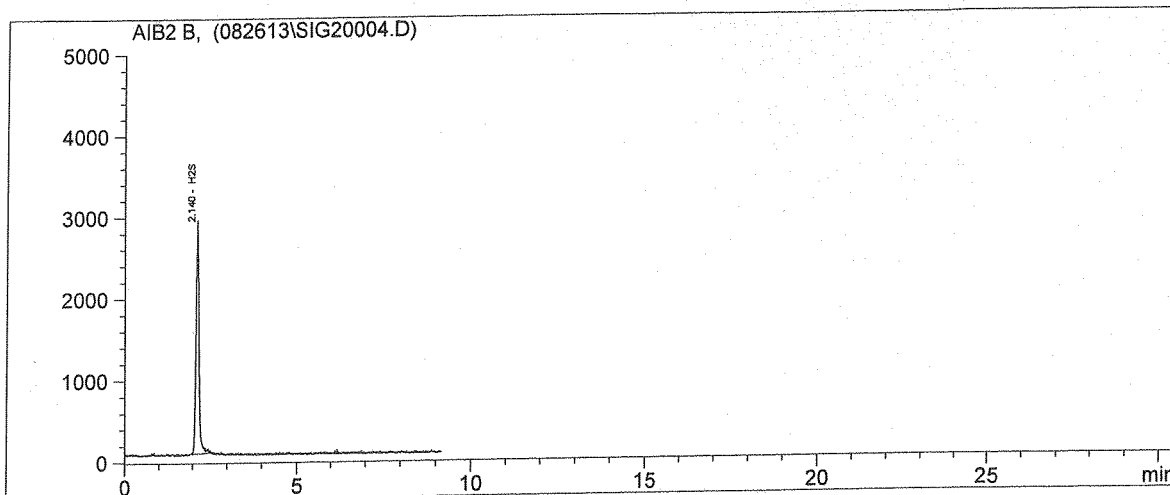
Totals: 507.807

\*\*\* End of Report \*\*\*

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Customized Report: D5504

Injection Date : 8/26/2013 6:39:11 AM      Seq. Line : 4  
 Sample Name : CCV 500ppbV tp    SS0677      ->Inj. Vol. : Manually  
 Multiplier : 1.00  
 Dilution : 1.00  
 Acq Operator : DH  
 Acq. Instrument : GC/SCD #10  
 Acq. Method : ASTM5504.M  
 Analysis Method : C:\HPCHEM\1\METHODS\D051413.M



Uncalibrated Peaks : using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
2.140	17318	513.617	H2S
0.000	0	0.000	COS
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Ethyl Methyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan
0.000	0	0.000	Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	n-Pentyl Mercaptan
0.000	0	0.000	2-Ethylthiophene
0.000	0	0.000	2,5-Dimethylthiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	n-Hexyl Mercaptan
0.000	0	0.000	2-Propylthiophene
0.000	0	0.000	Dimethyl Trisulfide
0.000	0	0.000	n-Heptyl Mercaptan
0.000	0	0.000	2-Butylthiophene
0.000	0	0.000	Dipropyl Disulfide
0.000	0	0.000	n-Octyl Mercaptan
0.000	0	0.000	Dipropyl Trisulfide

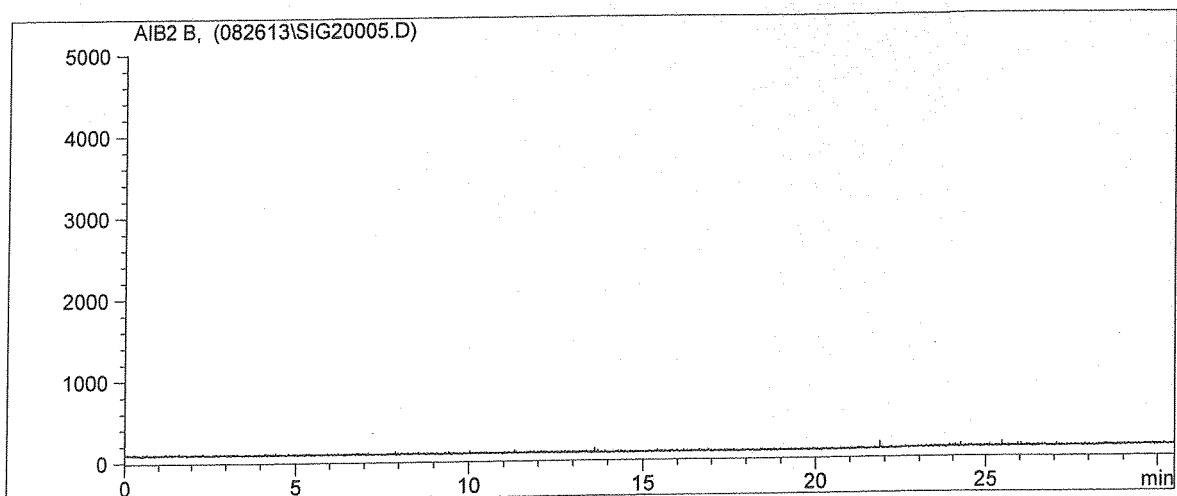
Totals: 513.617

\*\*\* End of Report \*\*\*

DA18/26/13

Customized Report: D5504

Injection Date : 8/26/2013 6:49:36 AM
Sample Name : Method Blank
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DH
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D051413.M
Seq. Line : 5
Inj. Vol. : Manually



Uncalibrated Peaks : using compound H2S

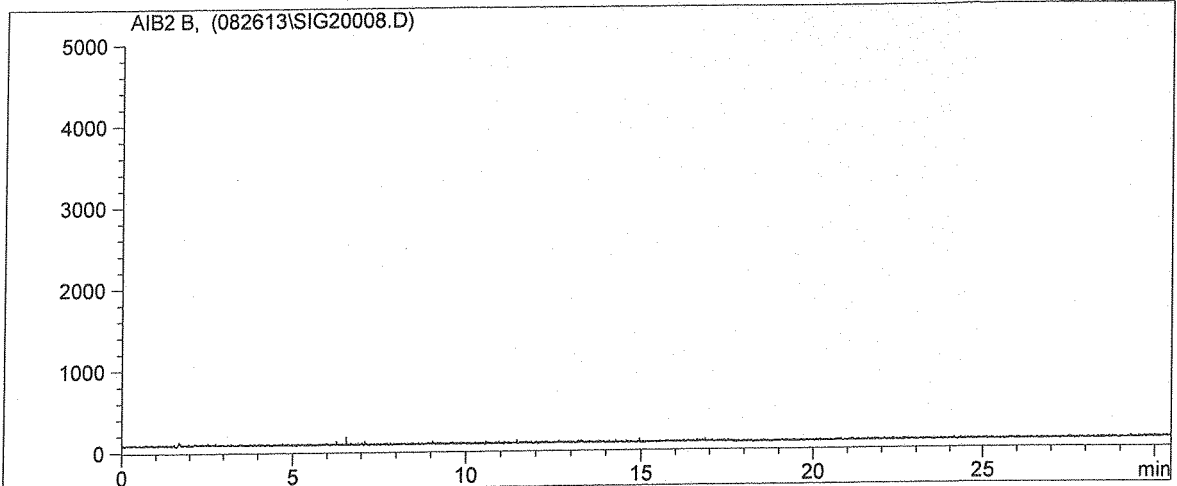
Table with 4 columns: Ret Time [min], Area, Amount [ppbV], Name. Lists various sulfur compounds like H2S, COS, Methyl Mercaptan, Ethyl Mercaptan, etc., all with 0.000 values.

Totals: 0.000

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Customized Report: D5504

Injection Date : 8/26/2013 9:38:10 AM      Seq. Line : 8  
Sample Name : 131139-65821      Inj. Vol. : Manually  
Multiplier : 1.00  
Dilution : 5.00  
Acq Operator : DH  
Acq. Instrument : GC/SCD #10  
Acq. Method : ASTM5504.M  
Analysis Method : C:\HPCHEM\1\METHODS\D051413.M



Uncalibrated Peaks : using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
0.000	0	0.000	H2S
0.000	0	0.000	COS
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Ethyl Methyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan
0.000	0	0.000	Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	n-Pentyl Mercaptan
0.000	0	0.000	2-Ethylthiophene
0.000	0	0.000	2,5-Dimethylthiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	n-Hexyl Mercaptan
0.000	0	0.000	2-Propylthiophene
0.000	0	0.000	Dimethyl Trisulfide
0.000	0	0.000	n-Heptyl Mercaptan
0.000	0	0.000	2-Butylthiophene
0.000	0	0.000	Dipropyl Disulfide
0.000	0	0.000	n-Octyl Mercaptan
0.000	0	0.000	Dipropyl Trisulfide

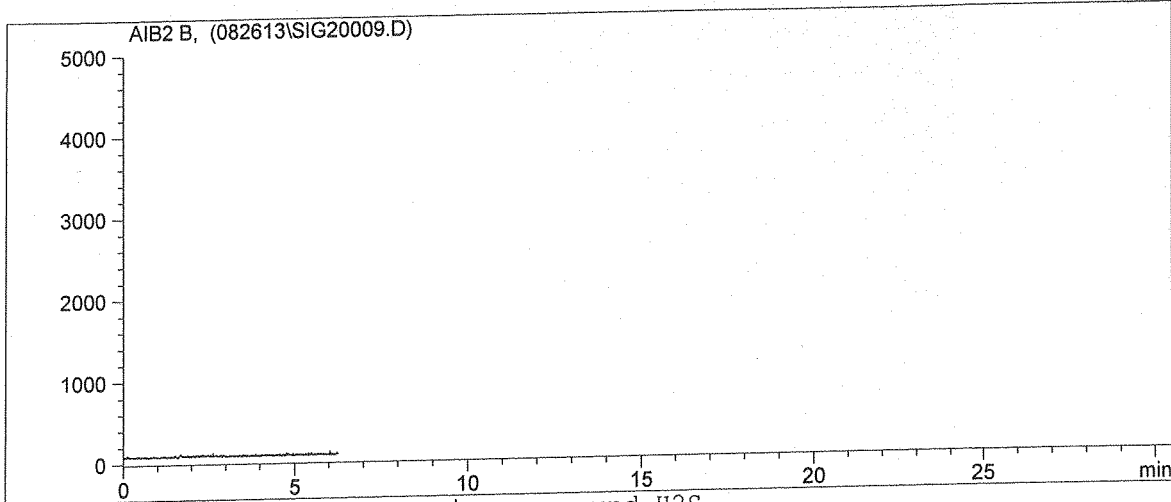
Totals: 0.000

\*\*\* End of Report \*\*\*

DA 8/26/13

Customized Report: D5504

Injection Date : 8/26/2013 10:13:20 AM      Seq. Line : 9  
 Sample Name : 131139-65821      dp      ->Inj. Vol. : Manually  
 Multiplier : 1.00  
 Dilution : 5.00  
 Acq Operator : DH  
 Acq. Instrument : GC/SCD #10  
 Acq. Method : ASTM5504.M  
 Analysis Method : C:\HPCHEM\1\METHODS\D051413.M



Uncalibrated Peaks : using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
0.000	0	0.000	H2S
0.000	0	0.000	COS
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Ethyl Methyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan
0.000	0	0.000	Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	n-Pentyl Mercaptan
0.000	0	0.000	2-Ethylthiophene
0.000	0	0.000	2,5-Dimethylthiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	n-Hexyl Mercaptan
0.000	0	0.000	2-Propylthiophene
0.000	0	0.000	Dimethyl Trisulfide
0.000	0	0.000	n-Heptyl Mercaptan
0.000	0	0.000	2-Butylthiophene
0.000	0	0.000	Dipropyl Disulfide
0.000	0	0.000	n-Octyl Mercaptan
0.000	0	0.000	Dipropyl Trisulfide

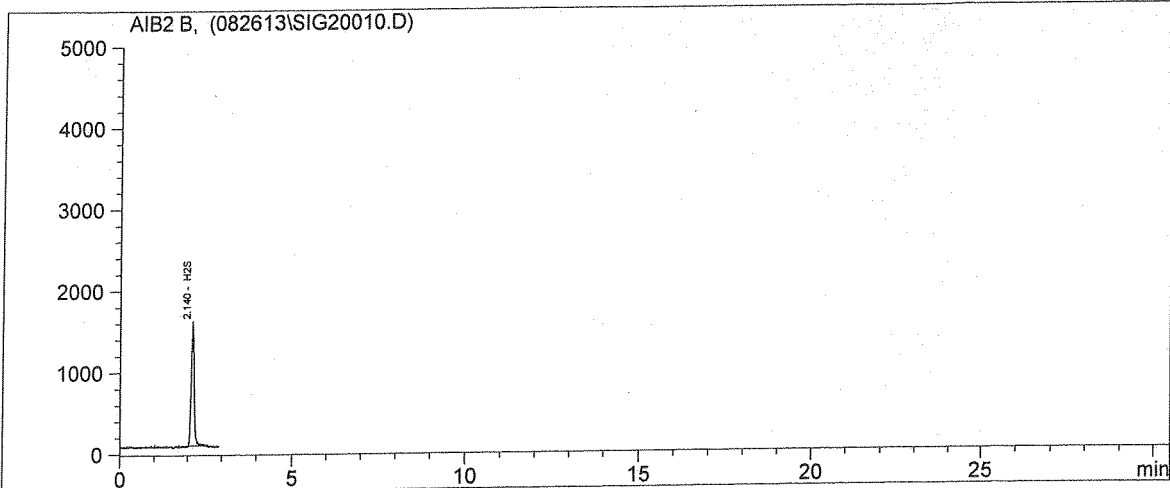
Totals: 0.000

\*\*\* End of Report \*\*\*

*DA8/26/13*

Customized Report: D5504

Injection Date : 8/26/2013 10:20:36 AM Seq. Line : 10
Sample Name : MS 65821 SS0677 ->Inj. Vol. :Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DH
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D051413.M



Uncalibrated Peaks : using compound H2S

Ret Time Area Amount Name
[min] [ppbV]

Table with 4 columns: Ret Time [min], Area, Amount [ppbV], and Name. The first row shows a peak at 2.140 min with an area of 9083 and amount of 269.385, identified as H2S. All other listed compounds have an amount of 0.000.

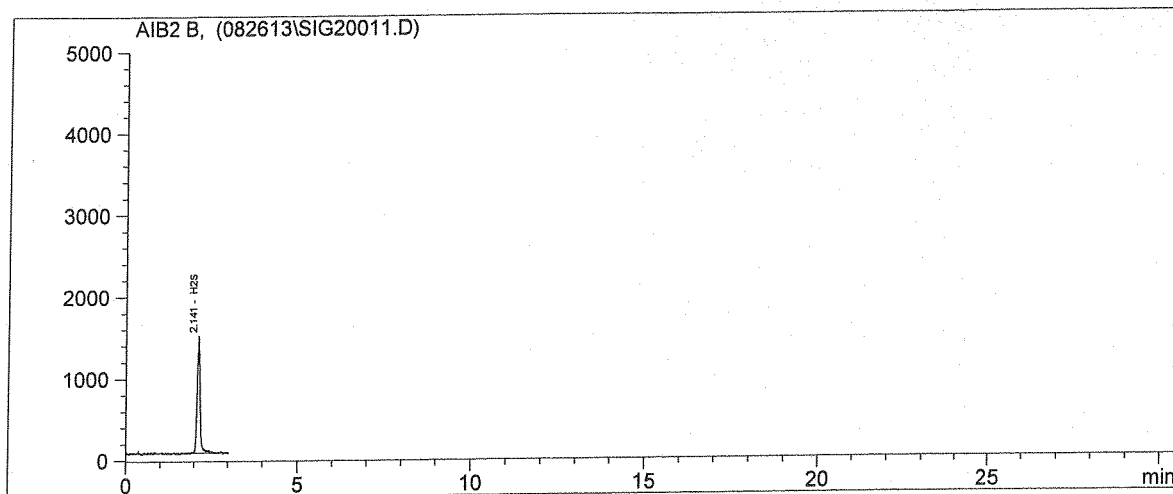
Totals: 269.385

\*\*\* End of Report \*\*\*

Handwritten signature/initials and date: DA 8/26/13

Customized Report: D5504

Injection Date : 8/26/2013 10:24:56 AM      Seq. Line : 11  
 Sample Name : MSD 65821      SS0677      ->Inj. Vol. : Manually  
 Multiplier : 1.00  
 Dilution : 1.00  
 Acq Operator : DH  
 Acq. Instrument : GC/SCD #10  
 Acq. Method : ASTM5504.M  
 Analysis Method : C:\HPCHEM\1\METHODS\D051413.M



Uncalibrated Peaks : using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
2.141	8908	264.185	H2S
0.000	0	0.000	COS
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Ethyl Methyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan
0.000	0	0.000	Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	n-Pentyl Mercaptan
0.000	0	0.000	2-Ethylthiophene
0.000	0	0.000	2,5-Dimethylthiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	n-Hexyl Mercaptan
0.000	0	0.000	2-Propylthiophene
0.000	0	0.000	Dimethyl Trisulfide
0.000	0	0.000	n-Heptyl Mercaptan
0.000	0	0.000	2-Butylthiophene
0.000	0	0.000	Dipropyl Disulfide
0.000	0	0.000	n-Octyl Mercaptan
0.000	0	0.000	Dipropyl Trisulfide

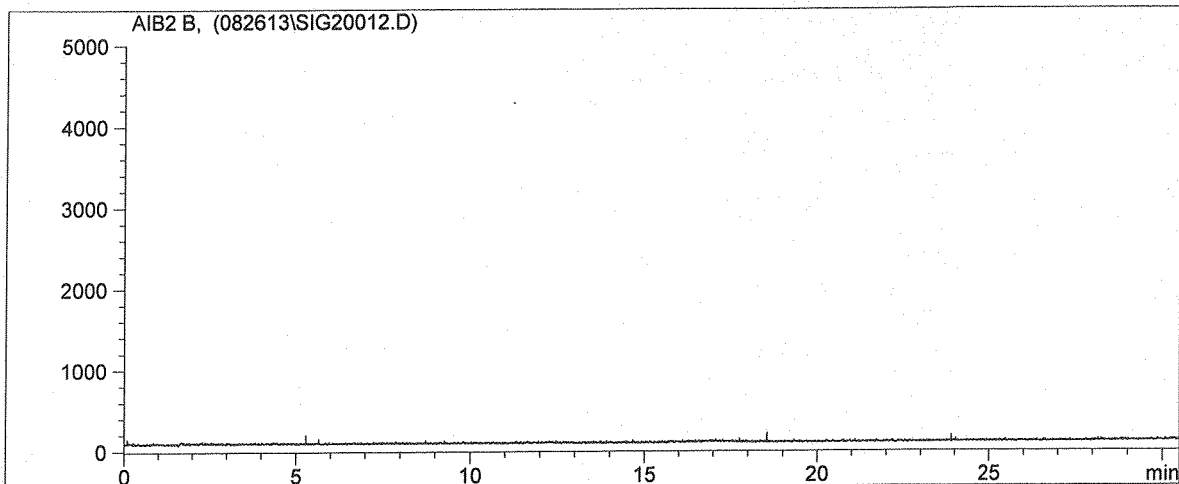
Totals: 264.185

\*\*\* End of Report \*\*\*

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Customized Report: D5504

Injection Date : 8/26/2013 12:42:50 PM      Seq. Line : 12  
 Sample Name : 131144-65859      Inj. Vol. : Manually  
 Multiplier : 1.00  
 Dilution : 1.00  
 Acq Operator : DH  
 Acq. Instrument : GC/SCD #10  
 Acq. Method : ASTM5504.M  
 Analysis Method : C:\HPCHEM\1\METHODS\D051413.M



Uncalibrated Peaks : using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
0.000	0	0.000	H2S
0.000	0	0.000	COS
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Ethyl Methyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan
0.000	0	0.000	Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	n-Pentyl Mercaptan
0.000	0	0.000	2-Ethylthiophene
0.000	0	0.000	2,5-Dimethylthiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	n-Hexyl Mercaptan
0.000	0	0.000	2-Propylthiophene
0.000	0	0.000	Dimethyl Trisulfide
0.000	0	0.000	n-Heptyl Mercaptan
0.000	0	0.000	2-Butylthiophene
0.000	0	0.000	Dipropyl Disulfide
0.000	0	0.000	n-Octyl Mercaptan
0.000	0	0.000	Dipropyl Trisulfide

Totals: 0.000

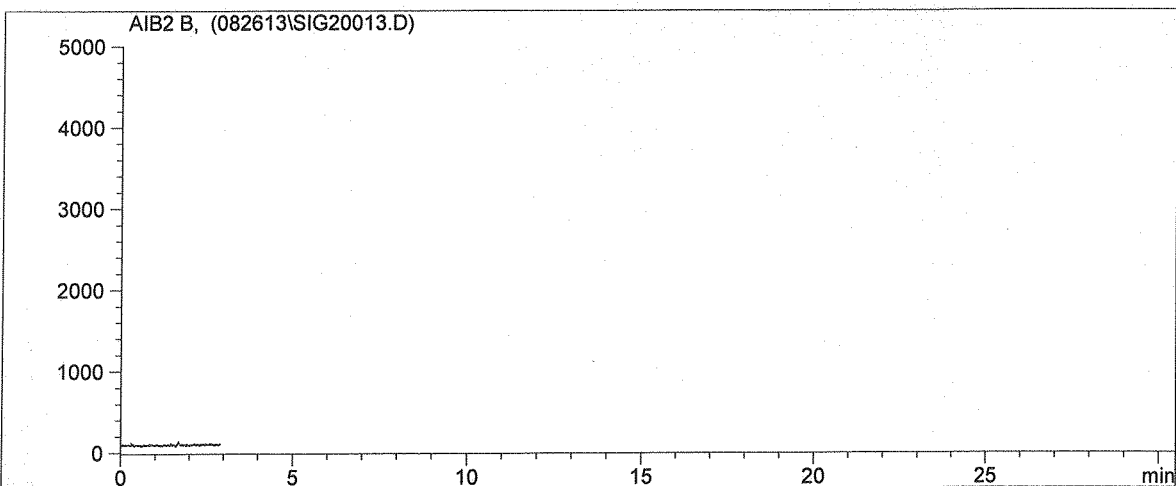
\*\*\* End of Report \*\*\*

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Customized Report: D5504

Injection Date : 8/26/2013 1:17:03 PM Seq. Line : 13
Sample Name : 131144-65859 Inj. Vol. : Manually
Multiplier : 1.00
Dilution : 1.00
Acq Operator : DH
Acq. Instrument : GC/SCD #10
Acq. Method : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D051413.M



Uncalibrated Peaks : using compound H2S

Table with 4 columns: Ret Time [min], Area, Amount [ppbV], Name. Lists various sulfur compounds with zero values for area and amount.

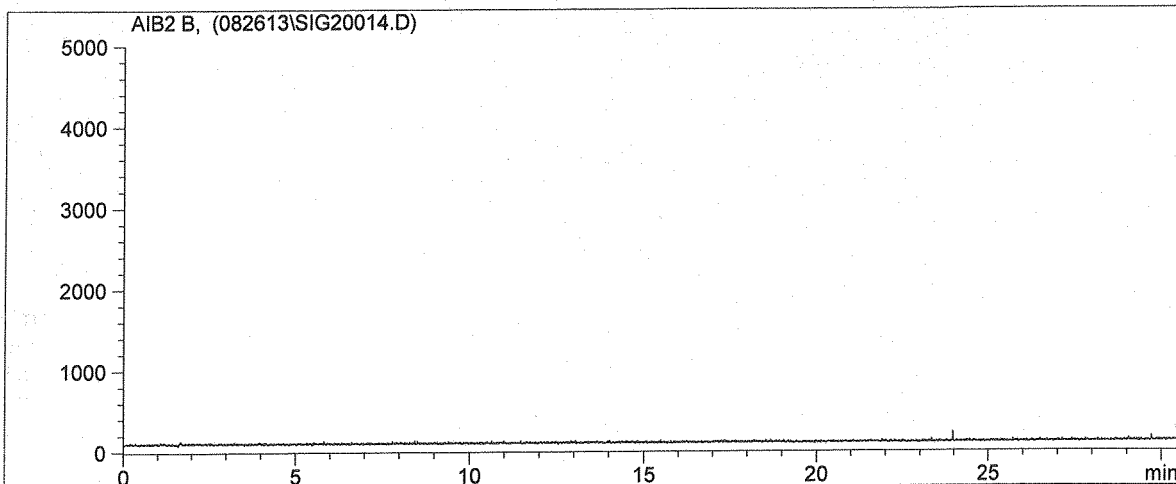
Totals: 0.000

\*\*\* End of Report \*\*\*

Handwritten signature/initials and date: 8/26/13

## Customized Report: D5504

Injection Date : 8/26/2013 1:20:29 PM      Seq. Line : 14  
 Sample Name : 131144-65860      Inj. Vol. : Manually  
 Multiplier : 1.00  
 Dilution : 1.00  
 Acq Operator : DH  
 Acq. Instrument : GC/SCD #10  
 Acq. Method : ASTM5504.M  
 Analysis Method : C:\HPCHEM\1\METHODS\D051413.M



Uncalibrated Peaks : using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
0.000	0	0.000	H2S
0.000	0	0.000	COS
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Ethyl Methyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan
0.000	0	0.000	Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	n-Pentyl Mercaptan
0.000	0	0.000	2-Ethylthiophene
0.000	0	0.000	2,5-Dimethylthiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	n-Hexyl Mercaptan
0.000	0	0.000	2-Propylthiophene
0.000	0	0.000	Dimethyl Trisulfide
0.000	0	0.000	n-Heptyl Mercaptan
0.000	0	0.000	2-Butylthiophene
0.000	0	0.000	Dipropyl Disulfide
0.000	0	0.000	n-Octyl Mercaptan
0.000	0	0.000	Dipropyl Trisulfide

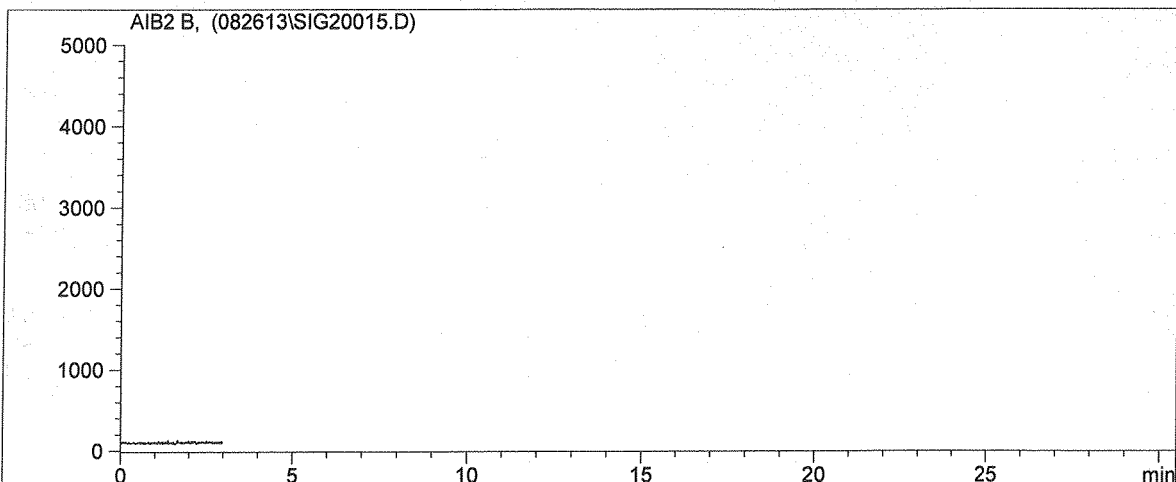
Totals: 0.000

\*\*\* End of Report \*\*\*

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Customized Report: D5504

Injection Date : 8/26/2013 1:55:28 PM      Seq. Line : 15  
 Sample Name : 131144-65860      Inj. Vol. : Manually  
 Multiplier : 1.00  
 Dilution : 1.00  
 Acq Operator : DH  
 Acq. Instrument : GC/SCD #10  
 Acq. Method : ASTM5504.M  
 Analysis Method : C:\HPCHEM\1\METHODS\D051413.M



Uncalibrated Peaks : using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
0.000	0	0.000	H2S
0.000	0	0.000	COS
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Ethyl Methyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan
0.000	0	0.000	Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	n-Pentyl Mercaptan
0.000	0	0.000	2-Ethylthiophene
0.000	0	0.000	2,5-Dimethylthiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	n-Hexyl Mercaptan
0.000	0	0.000	2-Propylthiophene
0.000	0	0.000	Dimethyl Trisulfide
0.000	0	0.000	n-Heptyl Mercaptan
0.000	0	0.000	2-Butylthiophene
0.000	0	0.000	Dipropyl Disulfide
0.000	0	0.000	n-Octyl Mercaptan
0.000	0	0.000	Dipropyl Trisulfide

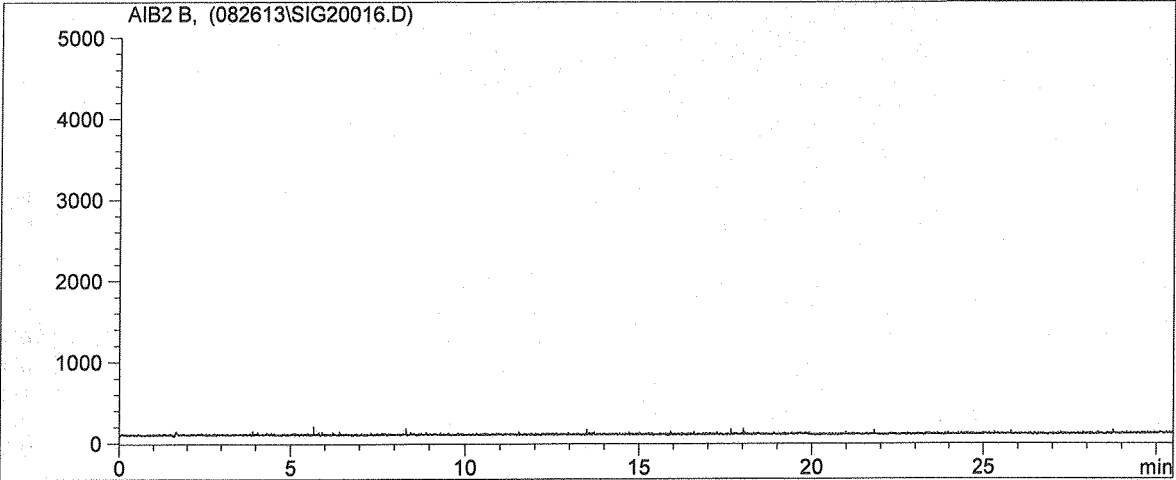
Totals: 0.000

\*\*\* End of Report \*\*\*

218/26/13

=====  
 Customized Report: D5504

Injection Date : 8/26/2013 1:59:03 PM                      Seq. Line : 16  
 Sample Name : 131144-65861                                  Inj. Vol. : Manually  
 Multiplier : 1.00  
 Dilution : 1.00  
 Acq Operator : DH  
 Acq. Instrument : GC/SCD #10  
 Acq. Method : ASTM5504.M  
 Analysis Method : C:\HPCHEM\1\METHODS\D051413.M



Uncalibrated Peaks : using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
0.000	0	0.000	H2S
0.000	0	0.000	COS
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Ethyl Methyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan
0.000	0	0.000	Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	n-Pentyl Mercaptan
0.000	0	0.000	2-Ethylthiophene
0.000	0	0.000	2,5-Dimethylthiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	n-Hexyl Mercaptan
0.000	0	0.000	2-Propylthiophene
0.000	0	0.000	Dimethyl Trisulfide
0.000	0	0.000	n-Heptyl Mercaptan
0.000	0	0.000	2-Butylthiophene
0.000	0	0.000	Dipropyl Disulfide
0.000	0	0.000	n-Octyl Mercaptan
0.000	0	0.000	Dipropyl Trisulfide

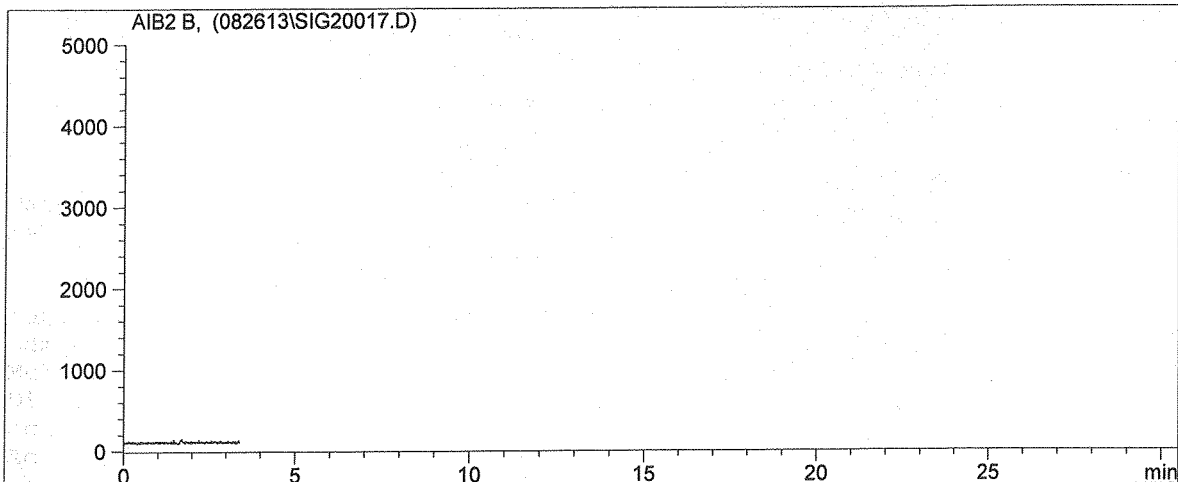
Totals: 0.000

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 \*\*\* End of Report \*\*\*

DA8/26/13

## Customized Report: D5504

Injection Date : 8/26/2013 2:34:15 PM      Seq. Line : 17  
 Sample Name : 131144-65861      Inj. Vol. : Manually  
 Multiplier : 1.00  
 Dilution : 1.00  
 Acq Operator : DH  
 Acq. Instrument : GC/SCD #10  
 Acq. Method : ASTM5504.M  
 Analysis Method : C:\HPCHEM\1\METHODS\D051413.M



Uncalibrated Peaks : using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
0.000	0	0.000	H2S
0.000	0	0.000	COS
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Ethyl Methyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan
0.000	0	0.000	Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	n-Pentyl Mercaptan
0.000	0	0.000	2-Ethylthiophene
0.000	0	0.000	2,5-Dimethylthiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	n-Hexyl Mercaptan
0.000	0	0.000	2-Propylthiophene
0.000	0	0.000	Dimethyl Trisulfide
0.000	0	0.000	n-Heptyl Mercaptan
0.000	0	0.000	2-Butylthiophene
0.000	0	0.000	Dipropyl Disulfide
0.000	0	0.000	n-Octyl Mercaptan
0.000	0	0.000	Dipropyl Trisulfide

Totals: 0.000

\*\*\* End of Report \*\*\*

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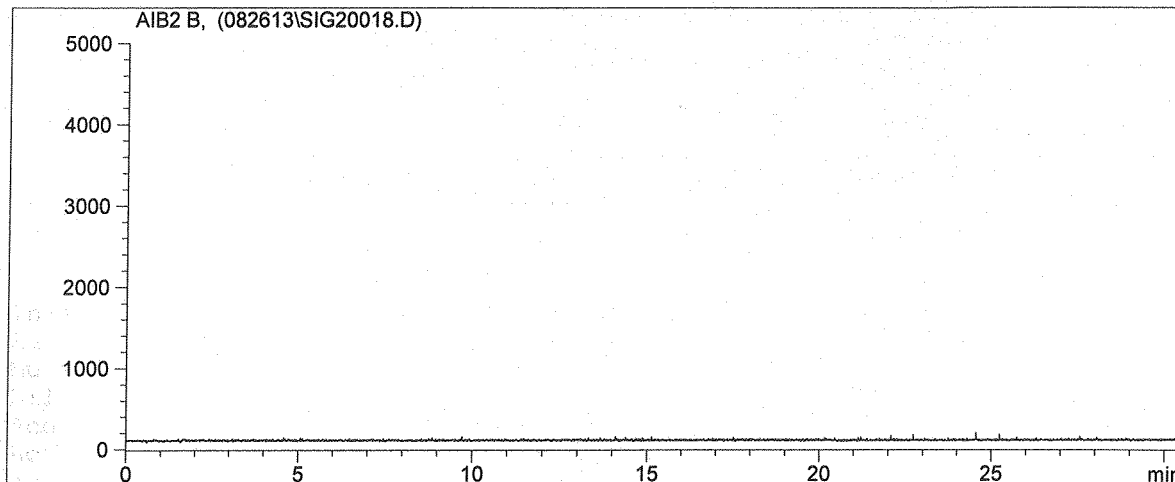
8/26/13

Customized Report: D5504

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Injection Date : 8/26/2013 2:38:15 PM           Seq. Line : 18
Sample Name    : 131144-65862                   Inj. Vol.  : Manually
Multiplier    : 1.00
Dilution      : 1.00
Acq Operator   : DH
Acq. Instrument : GC/SCD #10
Acq. Method    : ASTM5504.M
Analysis Method : C:\HPCHEM\1\METHODS\D051413.M

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Uncalibrated Peaks : using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
0.000	0	0.000	H2S
0.000	0	0.000	COS
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Ethyl Methyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan
0.000	0	0.000	Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	n-Pentyl Mercaptan
0.000	0	0.000	2-Ethylthiophene
0.000	0	0.000	2,5-Dimethylthiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	n-Hexyl Mercaptan
0.000	0	0.000	2-Propylthiophene
0.000	0	0.000	Dimethyl Trisulfide
0.000	0	0.000	n-Heptyl Mercaptan
0.000	0	0.000	2-Butylthiophene
0.000	0	0.000	Dipropyl Disulfide
0.000	0	0.000	n-Octyl Mercaptan
0.000	0	0.000	Dipropyl Trisulfide

Totals: 0.000

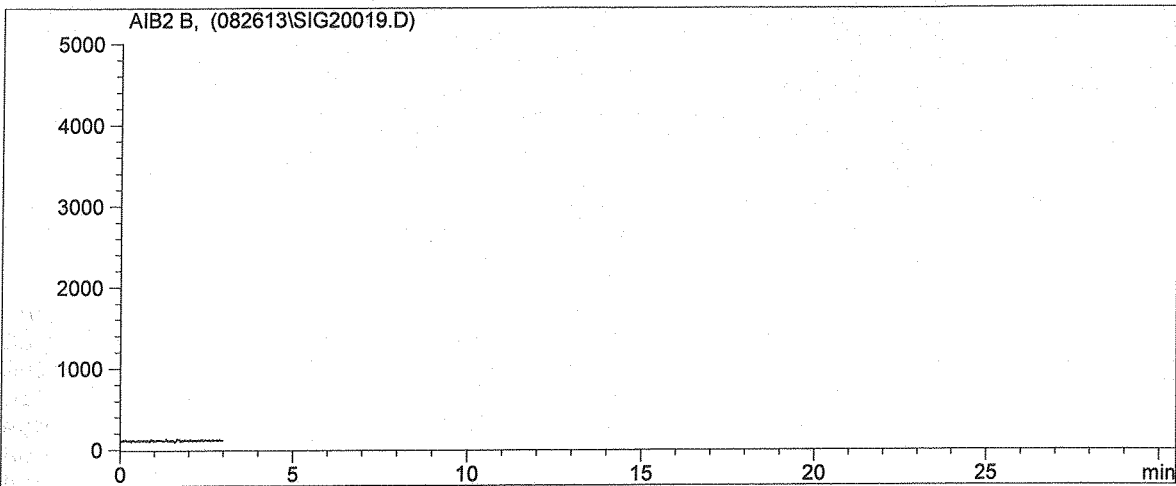
\*\*\* End of Report \*\*\*

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 Customized Report: D5504

Injection Date : 8/26/2013 3:12:55 PM                      Seq. Line : 19  
 Sample Name : 131144-65862                                      Inj. Vol. : Manually  
 Multiplier : 1.00  
 Dilution : 1.00  
 Acq Operator : DH  
 Acq. Instrument : GC/SCD #10  
 Acq. Method : ASTM5504.M  
 Analysis Method : C:\HPCHEM\1\METHODS\D051413.M



Uncalibrated Peaks : using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
0.000	0	0.000	H2S
0.000	0	0.000	COS
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Ethyl Methyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan
0.000	0	0.000	Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	n-Pentyl Mercaptan
0.000	0	0.000	2-Ethylthiophene
0.000	0	0.000	2,5-Dimethylthiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	n-Hexyl Mercaptan
0.000	0	0.000	2-Propylthiophene
0.000	0	0.000	Dimethyl Trisulfide
0.000	0	0.000	n-Heptyl Mercaptan
0.000	0	0.000	2-Butylthiophene
0.000	0	0.000	Dipropyl Disulfide
0.000	0	0.000	n-Octyl Mercaptan
0.000	0	0.000	Dipropyl Trisulfide

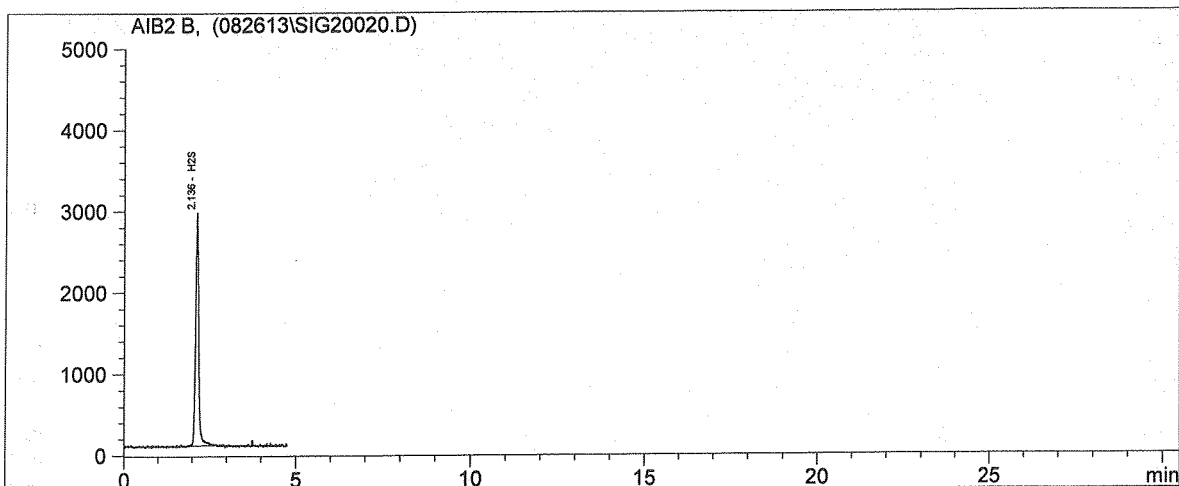
Totals: 0.000

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 \*\*\* End of Report \*\*\*

*8/26/13*

## Customized Report: D5504

Injection Date : 8/26/2013 3:16:50 PM      Seq. Line : 20  
 Sample Name : CCV 500ppbV      SS0677      ->Inj. Vol. : Manually  
 Multiplier : 1.00  
 Dilution : 1.00  
 Acq Operator : DH  
 Acq. Instrument : GC/SCD #10  
 Acq. Method : ASTM5504.M  
 Analysis Method : C:\HPCHEM\1\METHODS\D051413.M



Uncalibrated Peaks : using compound H2S

Ret Time [min]	Area	Amount [ppbV]	Name
2.136	17607	522.207	H2S
0.000	0	0.000	COS
0.000	0	0.000	Methyl Mercaptan
0.000	0	0.000	Ethyl Mercaptan
0.000	0	0.000	Dimethyl Sulfide
0.000	0	0.000	Carbon Disulfide
0.000	0	0.000	Iso-propyl Mercaptan
0.000	0	0.000	Tert-butyl Mercaptan
0.000	0	0.000	N-propyl Mercaptan
0.000	0	0.000	Ethyl Methyl Sulfide
0.000	0	0.000	Sec-butyl Mercaptan
0.000	0	0.000	Thiophene
0.000	0	0.000	Iso-butyl Mercaptan
0.000	0	0.000	Diethyl Sulfide
0.000	0	0.000	N-butyl Mercaptan
0.000	0	0.000	Dimethyl Disulfide
0.000	0	0.000	2-Methylthiophene
0.000	0	0.000	3-Methylthiophene
0.000	0	0.000	Tetrahydrothiophene
0.000	0	0.000	n-Pentyl Mercaptan
0.000	0	0.000	2-Ethylthiophene
0.000	0	0.000	2,5-Dimethylthiophene
0.000	0	0.000	Diethyl Disulfide
0.000	0	0.000	n-Hexyl Mercaptan
0.000	0	0.000	2-Propylthiophene
0.000	0	0.000	Dimethyl Trisulfide
0.000	0	0.000	n-Heptyl Mercaptan
0.000	0	0.000	2-Butylthiophene
0.000	0	0.000	Dipropyl Disulfide
0.000	0	0.000	n-Octyl Mercaptan
0.000	0	0.000	Dipropyl Trisulfide

Totals: 522.207

\*\*\* End of Report \*\*\*

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# Calibration Summary

Analysis Date: 5/14/2013

Analyst: DH/MH

Units: ppbv

SCAQMD 307.91 / ASTM D-5504 INITIAL CALIBRATION SUMMARY

CALIBRATION CURVE RAW DATA:

Standard Concentration (ppbv)	Retention time (min)	Response (Area)	RPD from initial result (< 5%)	Std Deviation	Standard Concentration	Mean Response (Area)	Calculated Concentration (From Mean)	Mean % Recovery (+/- 5%)
0.0	0.00	0						
0.0	0.00	0	0.0	0	0.0	0	0.0	0.0
0.0	0.00	0	0.0					
25.0	2.096	836						
25.0	2.094	855	2.2	12	25.0	842	25.0	99.9
25.0	2.093	834	0.2					
100.0	2.091	3222						
100.0	2.090	3374	4.6	82	100.0	3316	98.4	98.4
100.0	2.091	3353	4.0					
500.0	2.091	17233						
500.0	2.090	17453	1.3	272	500.0	17486	518.6	103.7
500.0	2.089	17773	3.1					
2500.0	2.087	85533						
2500.0	2.088	83551	2.3	1182	2500.0	84170	2496.3	99.9
2500.0	2.087	83425	2.5					
Avg. Ret: 2.091								

Calibration Verification Check Standards:

Check Standard Concentration: 500 ppbv

	Resp. (area)	Result (ppbv)	% Rec *	% RPD
Initial	17273	512.3	102.5	NA
Duplicate	17117	507.7	101.5	0.9
Triplicate	17378	515.4	103.1	0.6

\* All CV's must have +/- 5 % Recovery and < 5% RPD from Initial result.

Linear Slope: X = Y/ 33.7172  
 R2 value: 0.9999 Must be > 0.990

Laboratory Director (signature/date)

 5/14/13

SCAQMD 307.91/ASTM D-5504 INITIAL CALIBRATION SUMMARY

Area (mean) vs. Conc. (theor)

$y = 33.7172x$   
 $R^2 = 0.9999$

